

Amendment to the Claims:

The listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-6. Cancelled

7. (Currently Amended) A method for modeling fluid flows in a fractured ~~multiplayer~~multilayer porous medium to simulate interactions between pressure and flow rate variations in a well through the medium, comprising:

discretizing the fractured medium by a mesh pattern with fracture meshes centered on nodes at fracture intersections with each node being associated with a matrix volume; and

determining flows between each fracture mesh and the associated matrix volume in a pseudosteady state.

8. (Previously Presented) A method as claimed in claim 7, wherein:

the medium comprises fractured layers; and

the matrix volume associated with each fracture mesh in each layer of the porous medium contains all points which are closer to a corresponding node than to neighboring nodes.

9. (Currently Amended) A method as claimed in claim 8, wherein:

each fractured layer is discretized in pixels and the matrix volume associated with each fracture mesh is defined by including all pixels that are closer to the corresponding node than to the neighboring nodes by determining a distance from each pixel to a closest fracture mesh.

10. (Previously Presented) A method as claimed in claim 7, comprising:

determining at any point a transmissivity value for each pair of a fracture mesh and a matrix block by considering that pressure varies linearly depending on a distance from a point being considered to the fracture mesh associated with the matrix block.

11. (Previously Presented) A method as claimed in claim 8, comprising:

determining at any point a transmissivity value for each pair of a fracture mesh and a matrix block by considering that pressure varies linearly depending on a distance from a point being considered to the fracture mesh associated with the matrix block.

12. (Previously Presented) A method as claimed in claim 9, comprising:

determining at any point a transmissivity value for each pair of a fracture mesh and a matrix block by considering that pressure varies linearly depending on a distance from a point being considered to the fracture mesh associated with the matrix block.